

WHAT IS CLAIMED IS:

1. An apparatus for making an optical fiber, which draws an optical fiber preform upon heating and coats thus drawn optical fiber with a resin; said apparatus comprising:

5 a drawing furnace for drawing said optical fiber preform upon heating in an atmosphere constituted by a first gas having a predetermined thermal conductivity;

a resin coating section for coating said drawn optical fiber with said resin; and

10 a heating furnace, disposed between said drawing furnace and said resin coating section, for heating and annealing said drawn optical fiber in an atmosphere constituted by a second gas having a thermal conductivity lower than said predetermined thermal conductivity of said first gas; and

15 wherein said first gas is supplied into an upper portion of said drawing furnace so as to flow downward said drawing furnace and is discharged from a first gas exit section disposed between said drawing furnace and said heating furnace.

20 2. An apparatus for making an optical fiber according to claim 1, wherein said heating furnace is disposed with a gap with respect to said drawing furnace.

3. An apparatus for making an optical fiber according to claim 1, wherein said first gas is He gas; and

wherein said second gas is one of N₂ gas, Ar gas, and air.

25 4. An apparatus for making an optical fiber according to claim 1, wherein said heating furnace has a muffle tube through

which said drawn optical fiber passes,

said muffle tube being disposed at a position where said drawn optical fiber has an entering temperature within the range of 1400 to 1800°C with respect to said muffle tube.

5 5. A method of making an optical fiber, which draws an optical fiber preform upon heating and coats thus drawn optical fiber with a resin; said method comprising the steps of:

10 drawing said optical fiber preform upon heating in an atmosphere constituted by a first gas having a predetermined thermal conductivity;

 heating and annealing said drawn optical fiber in an atmosphere constituted by a second gas having a thermal conductivity lower than said predetermined thermal conductivity of said first gas;

15 coating said annealed optical fiber with said resin;
 supplying said first gas into an upper portion of said drawing furnace so that said first gas flows downward said drawing furnace; and

20 discharging said first gas from a first gas exit section disposed between said drawing furnace and said heating furnace.

 6. A method of making an optical fiber according to claim 5, wherein a heating furnace disposed with a gap with respect to a drawing furnace for drawing said optical fiber preform upon heating is used so as to anneal said drawn optical fiber in said heating furnace.

25 7. A method of making an optical fiber according to claim

5, wherein He gas is used as said first gas; and

wherein one of N₂ gas, Ar gas, and air is used as said second gas.

8. A method of making an optical fiber according to claim 5, wherein employed as said heating furnace is a heating furnace having a muffle tube through which said drawn optical fiber passes, said muffle tube being disposed at a position where said drawn optical fiber has an entering temperature within the range of 1400 to 1800°C with respect to said muffle tube; and

wherein said drawn optical fiber is annealed in said heating furnace.

9. A method of making an optical fiber, which draws an optical fiber preform upon heating; said method comprising the steps of:

using a drawing furnace for drawing said optical fiber preform in an atmosphere constituted by a first gas and a heating furnace, disposed with a gap with respect to said drawing furnace, for heating and annealing in an atmosphere constituted by a second gas said optical fiber drawn by said drawing furnace;

forming said gap between said drawing furnace and said heating furnace into a gas mixture layer in which said first and second gases exist in a mixed state;

feeding said optical fiber drawn by said drawing furnace to said heating furnace by way of said gas mixture layer; and

heating said drawn optical fiber in said heating furnace such that said optical fiber has a temperature within the range

of 1200 to 1700°C.

10. A method of making an optical fiber according to claim 9, wherein a barrier for separating said gas mixture layer from the outside air is provided,

5 said barrier being formed with a gas exit section for letting out at least said first gas.

11. A method of making an optical fiber according to claim 9, wherein a gas having a thermal conductivity on a par with or lower than that of said first gas is used as said second gas.

10 12. A method of making an optical fiber according to claim 9, wherein said drawn optical fiber has an entering temperature within the range of 1400 to 1900°C with respect to said gas mixture layer.

15 13. An apparatus for making an optical fiber, which draws an optical fiber preform upon heating; said apparatus comprising:

 a drawing furnace for drawing said optical fiber preform upon heating in an atmosphere constituted by a first gas; and

 a heating furnace, disposed with a gap with respect to said drawing furnace, for heating said drawn optical fiber in an atmosphere constituted by a second gas such that said optical fiber attains a temperature within the range of 1200 to 1700°C;

 wherein said gap between said drawing furnace and said heating furnace is formed into a gas mixture layer in which said first and second gases exist in a mixed state.